Institute for Materials Science

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Institute for Materials Science Distinguished Lecture Series

Prof. James Avery Sauls
Department of Physics & Astronomy
Northwestern University
Evanston, Illinois

From Spontaneous Symmetry Breaking to Topological Order
Key paradigms in quantum matter

Wednesday, November 25, 2015
2:00 - 3:00pm
MSL Auditorium (TA-03 - Bldg 1698 - Room A103)

Topic: In this lecture Professor Sauls discusses the connection between two paradigms in theoretical physics: spontaneous symmetry breaking and topological order. These organizing principles are illustrated with discoveries in condensed matter nuclear and particle physics.

Bio: James Sauls is a theoretical physicist whose research spans problems in nuclear astrophysics to solid-state physics. His current research program, supported by the US National Science Foundation, is an investigation of topological phases of condensed matter that emerge from spontaneous symmetry breaking, particularly topological phases of superfluid helium, unconventional superconductors and hybrid materials composed of ferromagnets, superconductors and semiconductors. Sauls received a PhD from State University of New York at Stony Brook, then held post-doctoral research appointments at Princeton University and the Nordic Institute for Theoretical Physics in Copenhagen, Denmark. He joined the faculty of Princeton University in 1982, moved to Northwestern University in 1987 where he is Professor of Physics. Sauls held visiting faculty appointments at the University of Copenhagen and Joseph Fourier University in Grenoble, as well as Director of Research at the CNRS laboratories in Grenoble, France. His expertise is in quantum field theory, statistical physics and condensed matter theory with applications to interacting quantum systems out of equilibrium.

Sauls is Fellow of the American Physical Society, served on the Executive committee of the Division of Condensed Matter Physics, and as an officer of the Aspen Center for Physics. He was awarded the Max Planck research prize in theoretical physics in 1994 and the John Bardeen Prize for theoretical contributions to the field of superconductivity in 2012.

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